

Claim Amendments

1-3. (canceled)

2. ~~4.~~ (previously presented) The wireless communication system as recited in claim 6, wherein the adaptive rate transmitter retransmits the at least one of the RLC blocks in a transmission unit which ^{is} ~~may be~~ different than the transmission unit in which the at least one of the RLC blocks was initially transmitted.

5. (canceled)

1 ~~6.~~ (currently amended) A wireless communication system being capable of supporting link adaptation comprising:

a transmitter for forming fixed length radio link control (RLC) blocks, for forming fixed length coded sub-blocks from the RLC blocks, for configuring the coded sub-blocks into transmission units being capable of supporting link adaptation at multiple code rates, for forming a downlink segment from the transmission units, for interleaving the downlink segment into an interleaved downlink segment, and for transmitting the interleaved downlink segment, wherein the transmitter comprises an adaptive rate transmitter for retransmitting at least one of the RLC blocks at a code rate which ^{is} ~~may be~~ different from the code rate used for an initial transmission of the at least one of the RLC blocks, wherein the adaptive rate transmitter retransmits only a first ~~portionsubportion~~ of a transmission unit that comprises the at least one RLC blocks and integer number of the coded sub-blocks, wherein the adaptive rate transmitter replaces a second ~~portionsubportion~~ of the transmission unit by ^{an} extended header information; and

a receiver for receiving the downlink segment, for obtaining the transmission units from the downlink segment, and for decoding the RLC blocks from the transmission units.

3 ~~7.~~ (previously presented) The wireless communication system as recited in claim ~~6,~~ wherein the adaptive rate transmitter retransmits a transmission unit comprised of coded sub-blocks which have not been transmitted previously.

8-9. (canceled)

4 ~~8.~~ (previously presented) The wireless communication~~s~~ system~~s~~ as recited in claim ~~6,~~ wherein the transmitter adds cyclic redundancy check sequences to the RLC blocks to form error coded RLC blocks which are configured into the coded sub-blocks.

5 ~~11.~~ (previously presented) The wireless communication¹ system as recited in claim ~~6~~, wherein the adaptive rate transmitter forms the coded sub-blocks by dividing the RLC blocks by a variable value.

8 ~~12.~~ (previously presented) A wireless communication system being capable of supporting link adaptation comprising:

a transmitter for forming fixed length radio link control (RLC) blocks, for forming fixed length coded sub-blocks from the RLC blocks, for configuring the coded sub-blocks into transmission units being capable of supporting link adaptation at multiple code rates, for forming a downlink segment from the transmission units, for interleaving the downlink segment into an interleaved downlink segment, and for transmitting the interleaved downlink segment, wherein the transmitter comprises an adaptive rate transmitter for transmitting the transmission units to ^athe receiver at a retransmission code rate which is different than the code rate at which the transmission units were transmitted and forming the coded sub-blocks by dividing the RLC blocks by a variable value, wherein the variable value is one of 6, 12 and 18.

13-14. (canceled)

10 ~~15.~~ (previously presented) The method as recited in claim ~~18~~⁹, wherein the step of ~~performing comprises the step of~~ performing convolutional coding uses a convolutional code rate of 1/3.

11 ~~16.~~ (previously presented) The method as recited in claim ~~18~~⁹, wherein the step of configuring comprises the step of interleaving the encoded RLC blocks.

17. (canceled)

⁹ ~~18~~. (previously presented) A method for communicating in a wireless communication system being capable of supporting link adaptation at multiple code rates, the method comprising the steps of:

forming fixed length radio link control (RLC) blocks;

configuring the RLC blocks into transmission units being capable of supporting link adaptation at multiple code rates, wherein the step of configuring comprises the steps of:

adding cyclic redundancy check (CRC) sequences to the RLC blocks;

performing convolutional coding on the RLC blocks and the CRC sequences to generate encoded RLC blocks;

segmenting the encoded RLC blocks into G coded sub-blocks, wherein groups of the coded sub-blocks are assembled to form the transmission units;

forming a downlink segment from the transmission units, wherein G is equal to one of 6, 12 and 18;

interleaving the downlink segment into an interleaved downlink segment; and

transmitting the interleaved downlink segment.

⁹
~~12~~ ~~19~~. (previously presented) The method as recited in claim ~~18~~, wherein the step of transmitting comprises the step of transmitting the interleaved downlink segment over GSM bursts.

⁹
~~13~~ ~~20~~. (previously presented) The method as recited in claim ~~18~~, wherein the step of configuring comprises the step of forming the transmission units using different numbers of the coded sub-blocks to obtain multiple code rates for the link adaptation.

⁹
14 ~~21~~. (previously presented) The method as recited in claim ~~18~~⁹, wherein the step of configuring comprises the step of using different transmission units for an initial transmission and for a retransmission of the RLC blocks.

⁹
15 ~~22~~. (previously presented) The method as recited in claim ~~18~~⁹, wherein the step of configuring comprises the step of using only a portion of one of the transmission units for a retransmission of the RLC blocks.

23. (currently amended) A method for communicating in a wireless communication system being capable of supporting link adaptation at multiple code rates, the method comprising the steps of:

forming fixed length radio link control (RLC) blocks;

configuring the RLC blocks into transmission units being capable of supporting link adaptation at multiple code rates, wherein the step of configuring comprises the steps of:

adding cyclic redundancy check (CRC) sequences to the RLC blocks;

performing convolutional coding on the RLC blocks and the CRC sequences to generate encoded RLC blocks;

segmenting the encoded RLC blocks into G coded sub-blocks, wherein groups of the coded sub-blocks are assembled to form the transmission units;

using only a first ~~portion~~^{subportion} of one of the transmission units for a retransmission of the RLC blocks, wherein the step of using only the first ~~portion~~^{subportion} comprises the steps of using an integer number of the coded sub-blocks to form the first ~~portion~~^{subportion} of the one of the transmission units used for the retransmission of the RLC blocks and replacing a second ~~portion~~^{subportion} of ^{one of} the transmission ^{units} ~~unit~~ by extended header information;

forming a downlink segment from the transmission units;

interleaving the downlink segment into an interleaved downlink segment; and

transmitting the interleaved downlink segment.

24. (original) The method as recited in claim 23 wherein the step of using ~~an~~^{the} integer number comprises the step of using coded sub-blocks which have not been transmitted earlier.

16 ~~25~~. (previously presented) The method as recited in claim ⁹~~18~~ wherein the step of forming ~~a~~^{the} downlink segment comprises the steps of:

forming a header indicative of the transmission units to be transmitted; and

forming ~~a~~^{the} downlink segment from the transmission units and the header.

17 ~~26~~. (original) The method as recited in claim ¹⁶~~25~~ wherein the header is transmitted along with the transmission units.

18 ~~27~~. (original) The method as recited in claim ¹⁶~~25~~ wherein the step of forming ~~a~~^{the} header comprises the step of providing, in the header, at least one coded sub-block sequence number associated with at least one of the coded sub-blocks in the transmission units to be transmitted.

19 ~~28~~. (original) The method as recited in claim ¹⁶~~25~~ wherein the step of forming ~~a~~^{the} header comprises the step of providing in the header a code rate field indicative of the size and number of ~~a~~^{the} transmission units to be transmitted.

20 ~~29~~. (original) The method as recited in claim ¹⁶~~28~~ wherein the step of forming ~~a~~^{the} header comprises the step of providing in the header a temporary flow identifier indicative of which receiver should receive the transmission units or which transmitter has sent the transmission units.

21 ~~30~~. (previously presented) The method as recited in claim ⁹~~18~~, wherein the step of configuring comprises the step of forming at least two of the transmission units of an unequal number of coded sub-blocks.

22 ~~31~~. (previously presented) The method as recited in claim ~~18~~⁹, wherein the step of transmitting comprises the step of transmitting the interleaved downlink segment over a general packet radio services system.

32. (canceled)

28 ~~33~~. (previously presented) The method as recited in claim ~~42~~²⁷, wherein the step of processing the error coded RLC blocks comprises the steps of:

performing a convolutional coding on the error coded RLC blocks to generate encoded RLC blocks; and

forming the coded sub-blocks from the encoded RLC blocks.

29 ~~34~~. (original) The method as recited in claim ~~33~~²⁸ wherein ~~the step of performing~~ ^{using convolutional} ~~comprises the step of performing the convolutional coding with a 1/3 code rate of 1/3.~~

30 ~~35~~. (original) The method as recited in claim ~~33~~²⁸ wherein the step of forming the coded sub-blocks comprises the step of interleaving the encoded RLC blocks.

31 ~~36~~. (original) The method as recited in claim ~~35~~³⁰ wherein the step of forming the coded sub-blocks comprises the step of :

segmenting the interleaved encoded RLC blocks into G coded sub-blocks and,

wherein groups of the coded sub-blocks are assembled to form the transmission units.

32 ~~37~~. (previously presented) The method as recited in claim ~~36~~³¹ wherein the step of transmitting comprises the step of transmitting the interleaved downlink segment over GSM bursts.

~~33~~ ~~38~~. (original) The method as recited in claim ~~36~~³¹ wherein at least two of the transmission units have a different number of coded sub-blocks.

~~34~~ ~~39~~. (original) The method as recited in claim ~~38~~³³ wherein the transmission units are modulated using phase shift keying.

~~35~~ ~~40~~. (original) The method as recited in claim ~~38~~³³ wherein the transmission units are modulated using gaussian minimum shift keying.

41. (canceled)

27 42. (previously presented) A method for communicating in a wireless communication system being capable of supporting link adaptation between multiple code rates and incremental redundancy, the method comprising the steps of:

forming fixed length radio link control (RLC) blocks;

combining the RLC blocks with a cyclic redundancy check sequence for error detection to form error coded RLC blocks;

processing the error coded RLC blocks to form coded sub-blocks;

assembling groups of the coded sub-blocks into transmission units based on the multiple code rates;

forming a header indicative of the transmission units;

forming a downlink segment from the transmission units and the header;

interleaving the downlink segment into an interleaved downlink segment;

transmitting the interleaved downlink segment to a receiver; and

retransmitting at least one of the RLC blocks at a code rate which ^{is} ~~may be~~ different from the code rate used for an initial transmission of the at least one of the RLC blocks, wherein the step of retransmitting comprises the steps of:

dropping one of the coded sub-blocks when retransmitting the transmission units;

and

replacing the dropped one of the coded sub-blocks with ^{an} extended header information in the retransmitted transmission units.

43. (canceled)

36 44. (previously presented) The method as recited in claim 42 wherein the step of replacing comprises the step of:

providing a coded sub-block sequence number in the extended header information.

6 45. (currently amended) The ^{wireless communication system} ~~apparatus~~ of claim 6, wherein the adaptive rate transmitter drops the second portions ~~subportion~~ of the transmission unit;

wherein the adaptive rate transmitter replaces the second portions ~~subportion~~ of the transmission unit with the extended header information.

25 46. (currently amended) The method of claim 23, wherein the step of using only the first portions ~~subportion~~ of one of the transmission units for ^{the} ~~a~~ retransmission of the RLC blocks comprises the steps of:

dropping one or more of the coded sub-blocks of the transmission ^{units} ~~unit~~;

adding ^{the} ~~a~~ extended header information in place of the one or more of the coded sub-blocks of the transmission ^{units} ~~unit~~.

37 47. (previously presented) The method of claim 42, wherein the step of replacing the dropped one of the coded sub-blocks with ^{the} ~~a~~ extended header information in the retransmitted transmission units comprises the step of:

adding the extended header information in place of the dropped one of the coded sub-blocks.

wireless communication system

7 ~~48~~. (currently amended) The ~~apparatus~~ of claim 6, wherein the transmission unit comprises only the first portionsubportion and the second portionsubportion.

wireless communication system

26 ~~49~~. (currently amended) The ~~apparatus~~ of claim 23, wherein the one of the transmission units comprises only the first portionsubportion and the second portionsubportion.